

**TRANSLATION**

**PATENT COOPERATION TREATY**

**PCT**

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>0000055075</b>	<b>FOR FURTHER ACTION</b>	See Form PCT/IPEA/416
International application No. <b>PCT/EP2004/012850</b>	International filing date ( <i>day/month/year</i> ) <b>12.11.2004</b>	Priority date ( <i>day/month/year</i> ) <b>17.11.2003</b>
International Patent Classification (IPC) or national classification and IPC <b>C14C1/06, C07C321/14</b>		
Applicant <b>BASF Aktiengesellschaft</b>		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of <u>5</u> sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising: a. <input type="checkbox"/> ( <i>sent to the applicant and to the International Bureau</i> ) a total of _____ sheets, as follows: <input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). <input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box. b. <input type="checkbox"/> ( <i>sent to the International Bureau only</i> ) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).
4. This report contains indications relating to the following items: <input checked="" type="checkbox"/> Box No. I Basis of the report <input type="checkbox"/> Box No. II Priority <input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability <input type="checkbox"/> Box No. IV Lack of unity of invention <input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement <input type="checkbox"/> Box No. VI Certain documents cited <input type="checkbox"/> Box No. VII Certain defects in the international application <input type="checkbox"/> Box No. VIII Certain observations on the international application

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2004/012850

## Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
- ☐ publication of the international application (Rule 12.4)
- ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1-31 \_\_\_\_\_ as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the claims:
- nos. 1-16 \_\_\_\_\_ as originally filed/furnished
- nos.\* \_\_\_\_\_ as amended (together with any statement) under Article 19
- nos.\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- nos.\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the drawings:
- sheets \_\_\_\_\_ as originally filed/furnished
- sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2004/012850

Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement																					
1.	<p>Statement</p> <table><tr><td rowspan="2">Novelty (N)</td><td>Claims</td><td><u>1-16</u></td><td>YES</td></tr><tr><td>Claims</td><td></td><td>NO</td></tr><tr><td rowspan="2">Inventive step (IS)</td><td>Claims</td><td><u>1-16</u></td><td>YES</td></tr><tr><td>Claims</td><td></td><td>NO</td></tr><tr><td rowspan="2">Industrial applicability (IA)</td><td>Claims</td><td><u>1-16</u></td><td>YES</td></tr><tr><td>Claims</td><td></td><td>NO</td></tr></table>	Novelty (N)	Claims	<u>1-16</u>	YES	Claims		NO	Inventive step (IS)	Claims	<u>1-16</u>	YES	Claims		NO	Industrial applicability (IA)	Claims	<u>1-16</u>	YES	Claims		NO
Novelty (N)	Claims		<u>1-16</u>	YES																		
	Claims		NO																			
Inventive step (IS)	Claims	<u>1-16</u>	YES																			
	Claims		NO																			
Industrial applicability (IA)	Claims	<u>1-16</u>	YES																			
	Claims		NO																			
2.	<p>Citations and explanations (Rule 70.7)</p> <p>Reference is made to the following documents:</p> <p>D1: DE 21 31 630 A1 (cited in the application)</p> <p>D2: WO 96/19590 A1.</p> <p>1. <u>Novelty (PCT Article 33(2)) and inventive step (PCT Article 33(3))</u></p> <p>The subject matter of the present claims, <b>claims 1-16</b>, is novel over the prior art cited in the international search report. None of the documents cited in the international search report discloses the <u>removal of keratins from the skins of dead animals</u>, using a thiol substance with a C<sub>4</sub> matrix as specified in formula I according to claims <b>1, 8</b> and <b>11</b>, or the rawhides thereby obtained, the compound according to formula I and the associated production method.</p> <p>The subject matter of the present claims <b>1-16</b> also involves an inventive step since document D1, which can be regarded as the closest prior art, contains nothing that might indicate the disclosed</p> <p style="text-align: right;">/...</p>																					

Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

method and rawhides, whether said document is read alone or in combination with any other document cited in the international search report:

document D1 discloses 1,4-dimercapto-2,3-butanediol and its calcium salts (1,4-dimercapto-2,3-butanediol and calcium hydroxide in an aqueous solution) (D1: aqueous solution of 1,4-dimercapto-2,3-butanediol and Ca ions, column 2, lines 6-12, and column 3, lines 12-25).

The method for the removal of keratins according to the present claims differs from that of D1 by virtue of the chemically different substructure of the substance used, that is to say the alkyl or aryl groups on the C<sub>4</sub> matrix. The problem addressed by the present invention is that of producing alternative thiol substances with a C<sub>4</sub> matrix for treating skins and a method for removing keratins as an alternative to the treatment thereof exclusively with Na<sub>2</sub>S or NaHS with specific thiols.

The above problem has been solved by treating the animal skins in an aqueous liquor containing the aforementioned organic compounds that comprise SH groups. Examples 2.2 to 2.5 (table 1) show the use of the methyl substituted dithiol compound I.1 for the dehairing of fleshed cowhides in an aqueous liquor. Since document D2 discloses only

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Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

the use of dithreothreitol (DTT) for the dehairing of animal skins and none of the remaining documents renders obvious the claimed methods, the substituted thiol products or the rawhides and leather thereby obtained, the subject matter of the application is considered to involve an inventive step.

2. Industrial applicability (PCT Article 33(4))

The invention relates to a low-sulphide method for the removal of keratins from skins, hides or fleeces in an aqueous solution that comprises SH-containing alcohols (dithioerythrol or dithiothreitol) and is therefore industrially applicable.